

a rotor including a rotor shaft, an armature core mounted on the shaft and having a plurality of poles, an armature winding wound about the poles, and a commutator mounted on the shaft adjacent one end of the armature core and connected to lead wires of the armature winding, the rotor being journaled in bearings and located confronting the stator; and

a speed sensor,

wherein the speed sensor is an axially extending coil of conductive material fixed to the surface of the magnet and located in the air gap between the magnet and the armature core.